Macurco™
Combustible Gas Detector GD-2

User Instructions for the 3M Macurco™ Combustible Gas Detector GD-2

Important: These *User Instructions* are to be provided to the homeowner/end user upon product installation.

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⚠ WARNING

Each person installing or using this equipment must read and understand the information in these *User Instructions* before use. Installation of this equipment by untrained or unqualified persons, or use that is not in accordance with these *User Instructions* may adversely affect product performance and **result in sickness or death.** For proper use see *User Instructions* or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

The GD-2A is an electronic detector of combustible gases. The GD-2A is designed for connection to UL Listed Fire Alarm/Burglary Control Panels. This combustible gas detector has been evaluated by UL for methane (natural) and propane (LP) gas. It is NOT designed to detect smoke, fire or carbon monoxide. Once the GD-2A is operational (ARMED) the green light will be on continuously. If gas is detected the red LED (ALARM) turns on and the alarm relay activates to indicate the alarm condition at the control panel. In the configuration, as shipped from the factory, the GD-2A is self-restoring meaning that when the air clears of gas, the red light turns off and the relay switches to its normal state.

If you suspect a gas leak, alert others and have everyone leave immediately.

- Do not light a match. Do not turn lights on or off. Do not use any electrical switches, including a garage door opener. Do not use the telephone, including cell phones. The electrical current in a phone, light or electric switch is enough to spark an explosion.
- Go outside to a safe place away from the suspect area and only then call the gas company for help or in an emergency call 911.
- Stay away from your home until someone in authority tells you it is safe to return.

GENERAL SAFETY INFORMATION

INTENDED USE

The GD-2A is a low voltage (12-24 VAC or VDC) electronic detector of combustible, heating type gases. The GD-2A is designed for connection to UL Listed Fire Alarm/Burglary Control Panels. NOTE: Any time the words "Control Panel" or "Alarm Panel" or "Alarm Control Panel" are used in these instructions, they refer to a UL Listed Fire Alarm/Burglary Control Panel. Alarm control panels that work on 12 or 24 VDC can provide battery backup to the GD-2A detectors. This combustible gas detector has been evaluated by UL for methane (natural gas) and propane (LP) gas. It is NOT designed to detect smoke, fire or carbon monoxide.

LIST OF WARNINGS AND CAUTIONS

⚠ WARNING

- Each person using this equipment must read and understand the information in these *User Instructions* before use. Use of this equipment by untrained or unqualified persons, or use that is not in accordance with these *User Instructions*, may adversely affect product performance and **result in sickness or death.**
- Use only for monitoring the gas which the sensor and detector are designed to monitor. Failure to do so may result in exposures to gases not detectable and **cause sickness or death.** For proper use, see supervisor or *User Instructions*, or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.
- GD-2A may not function effectively below 32ºF (0ºC) or above 120ºF (50ºC). Using the detector outside of this temperature range may adversely affect product performance and **result in sickness or death.**
- This detector helps monitor for the presence and concentration level of certain specified airborne gases. Misuse may produce an inaccurate reading, which means that higher levels of the gas being monitored may be present and could result in overexposure and **cause sickness or death.** For proper use, see supervisor or *User Instructions*, or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.
- The GD-2A is not designed to measure compliance with Occupational Safety and Health Administration (OSHA) commercial or industrial standards.
- When the unit is powered up it performs a self-test during which the green LED light will blink for a period of one and one half to two minutes. Afterward, the green LED light will turn on continuously to indicate the unit is in normal operation (ARMED). If the self-test fails or the green LED light does not turn on continuously do not use. Failure to do so may adversely affect product performance and **result in sickness or death.**
- Immediately exit the environment if there is an alarm condition on the detector. **Failure to do so may result in sickness or death.**
- This detector will only indicate the presence of combustible gas at the sensor. Combustible gas may be present in other areas. Accommodation spaces should be well ventilated when household cleaning supplies or similar contaminants are used.
- Do not cover or obstruct visual alarm LED. Doing so may adversely affect product performance and **result in sickness or death.**
- Do not disassemble unit or attempt to repair or modify any component of this detector. This detector contains no user serviceable parts, and substitution of components may adversely affect product performance and **result in sickness or death.**

CAUTION

- Avoid the use of harsh cleaning materials, abrasives and other organic solvents. Such materials may permanently scratch the surfaces, damage the sensor, labels, or instrument housing.
- If you have any doubts about the applicability of the equipment to your job situation, consult an industrial hygienist or call 3M at 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

USE INSTRUCTIONS AND LIMITATIONS

⚠ WARNING

Each person using this equipment must read and understand the information in these *User Instructions* before use. Use of this equipment by untrained or unqualified persons, or use that is not in accordance with these *User Instructions*, may adversely affect product performance and **result in sickness or death.**

USE FOR

The GD-2A is an electronic detector of combustible, heating type gases (natural gas and propane), designed for connection to alarm control panels. It can operate on 12 to 24 VDC power from standby or interruptible panel power, or be powered separately. The GD-2A is intended for installation in buildings in non-hazardous locations such as residences, retail stores, office buildings, and institutional buildings.

⚠ WARNING

Use only for monitoring the gas which the sensor and detector are designed to monitor. Failure to do so may result in exposures to gases not detectable and **cause sickness or death.** For proper use, see supervisor or *User Instructions*, or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

DO NOT USE FOR

The GD-2A is NOT intended for use in industrial applications such as refineries, chemical plants, etc. The GD-2A does NOT detect carbon monoxide. Do NOT mount the GD-2A in a corner. The GD-2A is designed for connection to UL Listed Fire Alarm/Burglary Control Panels. Do not connect the GD-2A to Fire Alarm Circuits, or Burglar Alarm or other signals. The Alarm Control Panel must be dedicated to gas detection or have alarm devices that provide a distinctive alarm for gas detection. Do NOT mount the GD-2A in kitchens or bathrooms - alcohols, ammonia, cleaning solvents, paint thinner, gasoline vapors, and aerosol propellants (aerosol cans such as hair spray usually contain a combustible gas) may cause nuisance alarms.

⚠ WARNING

GD-2A may not function effectively below 32ºF (0°C) or above 120ºF (50°C). Using the detector outside of this temperature range may adversely affect product performance and **result in sickness or death.**

GENERAL DESCRIPTION

The GD-2A is a low voltage (12-24 VAC or VDC) electronic detector of combustible, heating type gases, that has been evaluated by UL for methane (natural gas) and propane (LP) gas. The GD-2A is designed for connection to UL Listed Fire Alarm/Burglary Control Panels. The GD-2A has a SPDT Alarm relay, for connection to control panels or other devices. The GD-2A does NOT detect carbon monoxide. The GD-2A does not have an internal audible sounder.

FEATURES

- LISTED TO UL STANDARD 2075 FOR THE STANDARD FOR SAFETY FOR GAS AND VAPOR DETECTOR AND SENSORS
- SENSITIVITY TESTED BASED ON UL 1484 STANDARD FOR RESIDENTIAL GAS DETECTORS
- DETECTS HEATING GASES: PROPANE (LP), NATURAL GAS (METHANE),
- SPDT ALARM AND N.C. TROUBLE RELAYS
- CAN BE SELF-RESTORING OR LATCHING
- ELECTRONIC SENSORS: NO MAINTENANCE OR RECALIBRATION
- TEMPERATURE COMPENSATED
- SIMPLE INSTALLATION AND OPERATION
- SUPERVISED SENSOR

SPECIFICATIONS

- SIZE: 4 1/2 X 5 X 1 5/8 inches
- SHIPPING WEIGHT: 0.54 pound
- VOLTAGE: 12 to 24 VAC or VDC
- CURRENT (non-alarm): 45 mA @ 12 VDC, 22 mA @ 24 VDC, 65 mA @ 12 VAC, 45 mA @ 24 VAC
- CURRENT (in alarm): 70 mA @ 12 VDC, 35 mA @ 24 VDC, 100 mA @ 12 VAC, 65 mA @ 24 VAC
- COLOR: White
- SENSOR MAINTENANCE: Not required
- ALARM RELAY: SPDT, 0.125 AMPS, 40V, 3VA
- TROUBLE RELAY: SPST (NC), 0.250 AMPS, 40V, 10VA
- OPERATING TEMPERATURE RANGE: 32°F to 120°F (0°C to 50°C)
- ALARM SET POINT: Per UL 1484 (25% LEL)

INSTALLATION AND OPERATING INSTRUCTIONS

The following instructions are intended to serve as a guideline for the use of the 3M™ Macurco™ GD-2A Combustible Gas Detector. It is not to be considered all-inclusive, nor is it intended to replace the policy and procedures for each facility.

⚠ WARNING

This detector helps monitor for the presence and concentration level of certain specified airborne gases. Misuse may produce an inaccurate reading, which means that higher levels of the gas being monitored may be present and could result in overexposure and **cause sickness or death.** For proper use, see supervisor or *User Instructions*, or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

LOCATION

A GD-2A is usually located in each room (except kitchens or bathrooms) where there are gas appliances or through which gas pipes pass. Do NOT mount the GD-2A in a corner. Do NOT mount the GD-2A in kitchens or bathrooms - alcohols, ammonia, cleaning solvents, paint thinner, gasoline vapors, and aerosol propellants (aerosol cans such as hair spray usually contain a combustible gas) may cause alarms. Do NOT mount the GD-2A where the normal ambient temperature is below 32°F (0°C) or exceeds 120°F (50°C).

⚠ WARNING

This product is intended for use in ordinary indoor locations of family living units and office workspaces. The GD-2A is not designed to measure compliance with Occupational Safety and Health Administration (OSHA) commercial or industrial standards.

INSTALLATION

1. If the gas used is natural gas (methane) mount the GD-2A on a wall about one foot down from the ceiling. If the gas used is propane (LP), mount the GD-2A on a wall or column one foot above the floor. Use the same spacing as for smoke detectors-30 foot centers, 900 square feet per detector.
2. The three part plastic case allows the GD-2A to be either surface mounted or installed over a four-inch square or double gang electrical box, providing a near flush mount. The GD-2A snap-on front cover will need to be removed before installation. To remove it, lightly pry the front cover off of the mounting plate (middle section) with a coin or flat screwdriver inserted into the vent at the bottom. The cover will snap off exposing the electronics and mounting plate.
3. For flush mount, remove the 2 screws and rear cover from the mounting plate and use the appropriate hole pattern for installation. The four holes toward the center of the mounting plate match the hole pattern of a double gang electrical box. The four holes near the corners match the pattern of a four-inch square box. Mount the GD-2A so the "TOP" marked side of the mounting plate is at the highest side. Snap the front cover back on when finished, making sure that the lights line up with the access holes.

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4. When using the GD-2A with normally closed initiating circuits, use the Com. and N.C. alarm relay connections.
5. See wiring diagram and information below for connections of the GD-2A.

   UL 2075 Requirements - 12.4.1 Power supply leads provided for field connection shall not be less than 6 inches (152 mm) long, provided with strain relief, and shall be no smaller than 18 AWG (0.82 mm²). The insulation, when thermoplastic, shall not be less than 1/32 inch (0.8 mm) thick.

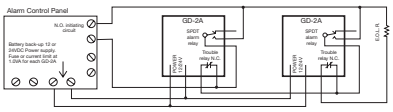
   Exception No. 1: A lead is not prohibited from being less than 6 inches long when it is evident that the use of a longer lead results in damage to the insulation.

   Exception No. 2: Solid copper leads as small as 26 AWG (0.13 mm²) are not prohibited from use when:

   A. The current does not exceed 1 ampere for lengths up to 2 feet (61 cm) and the current does not exceed 0.4 ampere for lengths from 2 feet (61 cm) up to 10 feet (3.05 m);
   B. There are two or more conductors and they are covered by a common jacket, or the equivalent; and
   C. The assembled conductors comply with the requirements of the Strain Relief Tests, Section 18.

   12.4.2 Leads provided for field connection to power limited signaling circuits, such as those employed for connection to remote signaling devices, shall not be smaller than 16 AWG (1.3 mm²), for a single conductor; 19 AWG (0.65 mm²) for two or more conductors; and 26 AWG (0.13 mm²) for four or more conductors of a multi-conductor cable. The conductor shall be solid, bunch tinned stranded, or stranded copper. Stranded copper wire consisting of not more than seven strands shall be employed only for 18 AWG (0.82 mm²) and larger conductors.

TYPICAL CONNECTION OF TWO GD-2A TO AN ALARM CONTROL PANEL



6. The GD-2A uses a full wave bridge rectifier at its power input, so that it is independent of the polarity of the input power. It can operate on DC or AC voltages between 12 and 24 volts.
7. A switching regulator is used to efficiently match the wide input voltage range to the fixed, internal power system. As a result the power consumption is fairly constant at about 0.75 watts in normal operation, and 1.0 watt in alarm.
8. The alarm control panel zone inputs must be terminated with end of line resistors (E.O.L.R.), which are provided with the panel. The GD-2A does not have an internal audible sounder and must be connected to a UL Listed Fire Alarm/ Burglary Control Panel with a UL Listed audible device that provides at least 85 dB sound output.

POWER UP

⚠ WARNING

When the unit is powered up it performs a self-test during which the green LED light blinks for a period of one and one half to two minutes. Afterwards, the green LED light will turn on continuously to indicate the unit is in normal operation (ARMED). If the self-test fails or the green LED light does not turn on continuously do not use. Failure to do so may adversely affect product performance and **result in sickness or death.**

When power is first applied to the detector, it will go through a warm-up period of one and one half to two minutes, during which alarms are inhibited. The green LED light will turn on and off during the delay period. The green light will turn on continuously (ARMED) afterwards to indicate the unit is in normal operation.

OPERATION

1. Once the GD-2A is operational (ARMED) the green light will be on continuously. If gas is detected the red LED (ALARM) turns on and the SPDT alarm relay activates to indicate the alarm condition.
2. In the configuration, as shipped from the factory, the GD-2A is self-restoring. When the air clears of gas, the red light turns off and the relay switches to its normal state. A jumper wire on the circuit board can be clipped to allow the unit to latch in upon alarm. Once latched in, power will need to be interrupted to un-latch the alarm condition.
   - The GD-2A can be modified, either before or after installation, to have a latching output. Pull off the cover and locate the jumper wire labeled "CLIP FOR LATCH IN" on the printed circuit board in the upper right hand side. Clip or cut this jumper wire and separate the wire ends. Now the unit will stay in alarm (once gas has exceeded the pre-set threshold) until the power is interrupted. When replacing the cover, make sure the lights line up with their access holes.
3. The GD-2A has a supervisory circuit of critical functions. A trouble condition, due to failure of a non-reliable component, results in both lights switching on and off and the normally closed trouble relay opening. A power failure also causes the trouble relay to open.

ALARMS

⚠ WARNING

Immediately exit any environment if there is an alarm condition on the detector. **Failure to do so may result in sickness or death.**

The final alarm is determined by the configuration of the control panel, with the GD-2A only switching its relay to actuate the panel. Do not connect the GD-2A to Fire Alarm Circuits, or Burglar Alarm or other signals. The illumination of the red (ALARM) light on the GD-2A indicates the alarm condition. When an alarm occurs immediately evacuate the premises and seek assistance.

In addition to the methane (natural gas) and propane (LP) gas that it is designed to detect, the GD-2A can also be affected by a broad range of combustible gases. Some of these that may cause an alarm are: alcohols, ammonia, cleaning solvents, paint thinner, gasoline vapors, and aerosol propellants. Aerosol cans such as hair spray usually contain a combustible gas. Always make sure that there is adequate ventilation when you use these products. Proper location, not in kitchens or bathrooms, will minimize alarms due to normal use of household products.

⚠ WARNING

This detector will only indicate the presence of combustible gas at the sensor. Combustible gas may be present in other areas. Accommodation spaces should be well ventilated when household cleaning supplies or similar contaminants are used.

TROUBLE INDICATOR

The trouble signal is determined mostly by the configuration of the alarm panel, with the GD-2A trouble relay only providing an open circuit for actuation. A failure of the gas-sensing element will result in both lights turning on and off and the trouble relay opening. Failure of power supplies in the GD-2A or a lack of power to the detector will result in the trouble relay opening. The most common expected trouble would be a break in the wiring between the panel and the GD-2A. When a trouble signal occurs call the alarm panel installer for assistance.

⚠ WARNING

Do not cover or obstruct visual alarm LED. Doing so may adversely affect product performance and **result in sickness or death.**

MAINTENANCE

⚠ WARNING

Do not disassemble unit or attempt to repair or modify any component of this instrument. This instrument contains no user serviceable parts, and substitution of components may impair intrinsic safety which may adversely affect product performance and **result in sickness or death.**

The GD-2A does not require regular maintenance. The unit uses a self-purging semi-conductor sensor that has a long life expectancy (7-10 year life). All service and repair of the GD-2A are to be performed by 3M. 3M does not sanction any third-party repair facilities.

TESTING

Once the unit is fully operational (the green light is on steady), test the unit by directing gas from an unlighted butane cigarette lighter into the detector near the left hand side through one of the vent holes. It will be necessary to hold the lighter valve open for several seconds. The red light (ALARM) will turn on, the alarm relay switches, and any devices connected should activate. The detector should be tested regularly by using gas from an unlit cigarette lighter, as detailed above.

CLEANING

The GD-2A should be cleaned using the soft brush attachment of your vacuum cleaner. The GD-2A should be tested after cleaning to ensure the unit is operating normally.

SENSOR POISONS

The gas sensor tip in the detector is designed with extreme sensitivity to the environment. As a result, the gas sensor may deteriorate if it is exposed to a direct spray from aerosols such as paints, silicone vapors, etc., or to a high density of corrosive gases (such as hydrogen sulfide, sulfur dioxide) for an extended period of time.

3M FIXED GAS DETECTION PRODUCTS LIMITED WARRANTY

3M warrants the GD-2A gas detector will be free from defective materials and workmanship for a period of two (2) years from date of manufacture (indicated on the inside cover of the GD-2A), provided it is maintained and used in accordance with 3M instructions and/or recommendations. If any component becomes defective during the warranty period, it will be replaced or repaired free of charge, if the unit is returned in accordance with the instructions below. This warranty does not apply to units that have been altered or had repair attempted, or that have been subjected to abuse, accidental or otherwise. The above warranty is in lieu of all other express warranties, obligations or liabilities. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED TO A PERIOD OF TWO (2) YEARS FROM THE PURCHASE DATE. 3M shall not be liable for any incidental or consequential damages for breach of this or any other warranty, express or implied, arising out of or related to the use of said gas detector. Manufacturer or its agent's liability shall be limited to replacement or repair as set forth above. Buyer's sole and exclusive remedies are return of the goods and repayment of the price, or repair and replacement of non-conforming goods or parts.

FOR MORE INFORMATION

In United States, contact:
Website: www.3M.com/OccSafety
Technical Assistance: 1-800-243-4630
For other 3M products:
1-800-3M-HELPS or 1-651-737-6501

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